CHAPTER 2.1

Source Reduction

Grade • Subject • Skills Index

	Activity Name	Discovering Nature's Packaging	Reuse: Not Just for the Birds	Source Reduction Roundup	Ecological Picnic	How Much Lunch Is Left Over?
Grade Range	K	✔	✔			
	1	✔	✔			
	2		✔			
	3		✔	✔	✔	
	4		✔	✔	✔	
	5			✔		✔
	6			✔		✔
Subjects Covered	Math				✔	✔
	Science				✔	✔
	Language Arts			✔		
	Social Studies				✔	
	Art	✔	✔			
	Health					
Skills Used*	Communication			✔	✔	
	Reading					
	Research					
	Computation				✔	✔
	Observation/ Classification	✔		✔	✔	
	Problem Solving					✔
	Motor Skills	✔	✔			

*See Glossary of Skills for more details.

Source Reduction

What Is Source Reduction?

Americans crave convenience—but at what cost? American households have more discretionary income than most households worldwide, spending more on products that create more waste. Over the last 40 years, the amount of waste each person creates has almost doubled from 2.7 to 4.4 pounds per day (that is 1,606 pounds per person per year!) (EPA, 2003). Though reusing, recycling, and composting are all important methods of reducing the amount of waste produced, the most effective way to stop this trend is by preventing the production of materials that could become waste.

Source reduction, also known as **waste prevention,** is the practice of designing, manufacturing, purchasing, or using materials (such as products and packaging) in ways that reduce the amount or toxicity of waste. Source reduction can help reduce waste disposal and handling costs because it avoids the costs of **recycling**, municipal **composting**, **landfilling**, and **combustion**. It also conserves **natural resources** and reduces **pollution**. In 2000, Americans source reduced (prevented) 55.1 million tons of solid waste (EPA, 2003)

Preventing waste before it is generated is a common-sense way to save financial and natural resources, as well as reduce pollution. That is why EPA encourages consumers, businesses, and governments to make source reduction their first priority in waste management practices. For waste that cannot be prevented, recycling and composting are the next best choices. (See the Teacher Fact Sheet titled *Recycling* on page 101 for more information on recycling.)

Waste is generated throughout the life cycle of a product—from extracting raw materials, to transporting materials, to processing and manufacturing goods, to using and disposing of products. Manufacturers that reuse materials in the production process or that use less material to manufacture products can decrease waste dramatically. Other ways that manufacturers practice source reduction include:

- Reduce the amount of packaging in the manufacture of items.
- Reduce the amount of toxic components in a product or use smaller quantities of items with high toxicity.
- Reuse parts in the manufacture of a product.
- Redesign products to make them more modular. This allows broken or unusable components to be replaced rather than discarding the entire item.

Source Reduction Facts

- Since 1977, the weight of 2-liter plastic soft drink bottles has been reduced from 68 to 51 grams each. That means that 250 million pounds of plastic per year has been prevented from becoming part of the waste stream.
- When McDonald's reduced its napkin size by 1 inch, the company prevented 12 million pounds of paper from being thrown away each year. In 1999, McDonald's switched to lighter weight packaging for two of their sandwiches, conserving 3,200 tons of boxboard containers.
- State Farm Mutual Auto Insurance converted to electronic cameras for their claims processing, saving more than 50 tons of instant and 35mm film.

(Source: EPA, 1996, 1999)

In addition to reducing the amount of materials in the solid waste stream, reducing waste toxicity by selecting nonhazardous or less hazardous materials for manufacturing is another important component of source reduction. Using less hazardous alternatives for certain items (e.g., cleaning products, pesticides), sharing products that contain hazardous chemicals instead of throwing out leftovers, reading label directions carefully, and using the smallest amount of a chemical necessary are some ways to reduce waste toxicity. (See the Teacher Fact Sheets titled *Solid Waste* on page 47 and *Hazardous Waste* on page 51 for information on safe household hazardous waste practices.)

Source reduction is a challenge requiring creativity and ingenuity, but devising ways to prevent waste can be very satisfying and even fun! There are many ways consumers can practice source reduction. Here are just a few examples:

- Choose products that do not use excessive packaging.
- Buy remanufactured or used items.
- Buy items in bulk rather than multiple, smaller packages to decrease the amount of packaging waste created.
- Maintain and repair durable items.
- Reuse bags, containers, and other similar items.
- Borrow, rent, or share items that are used infrequently.
- Donate items instead of throwing them out.
- Leave grass clippings on the lawn (**grasscycling**) or use them for **backyard composting**.
- Rake fallen leaves for composting rather than bagging them and throwing them away.

What Are the Benefits of Source Reduction?

Reducing waste at the source is the ultimate environmental benefit. It means waste does not have to be collected, handled, or processed in any way, which prevents pollution, saves energy, and saves money. In addition, by reducing consumption, fewer products are manufactured, thus reducing the impacts that manufacturing can cause. For example, by manufacturing less, **greenhouse gas** emissions are reduced, which can make a difference in preventing **global climate change**.

Preventing waste also can mean economic savings for communities, businesses, schools, and individual consumers. Many communities have instituted "pay-as-you-throw" waste management systems in which people pay for each can or bag of trash they produce that requires

disposal. When these households reduce their waste at the source, they create less trash and, consequently, pay a lower trash bill.

Businesses also have an economic incentive to practice source reduction. Manufacturing costs can decrease for businesses that reduce packaging, which can mean a larger profit margin and savings that can be passed on to the consumer.

Schools also can share in the economic benefits of source reduction. Buying products in bulk frequently means a savings in cost. Often, what is good for the environment is good for the pocketbook as well.

What Are the Challenges of Source Reduction?

Practicing source reduction is likely to require some change in daily routines. Changing some habits may be difficult, but the environmental returns on the effort can make it worthwhile. For example, while using disposable utensils might be convenient, using durable flatware saves resources and requires only slightly more effort (for cleaning). On the other hand, if waste is not reduced, the economic and social costs of waste disposal and the environmental impacts throughout the life cycle of products will continue to grow, and it will become increasingly harder to make decisions about waste management.

Even if consumers decide to change their consumption habits, products with minimal packaging and nontoxic ingredients are not always available. Balancing the immediate convenience of easily available products with the long-term benefits of waste prevention will be an ongoing commitment.

What Are Some Emerging Trends in Source Reduction?

Many companies are becoming more involved in source reduction by remanufacturing and reusing components of their products or the entire product. A toner cartridge for a laser printer is an example of a product that once was disposable but now is manufactured to be reused. Many products are manufactured to use "modular," or replaceable, units.

One manufacturer of photocopy machines takes back and remakes equipment from more than 30,000 tons of used photocopiers. Parts from returned machines that meet internal criteria for manufacturing are reprocessed into new products. Parts that do not meet remanufacturing criteria and cannot be repaired are often ground, melted, or otherwise recycled into basic raw materials. The company estimates annual savings of several hundred million dollars in raw material, labor, and disposal as a result of design changes and product return programs.

Other companies are also taking advantage of more environmentally preferable ingredients as ways to reduce the weight of packaging. Some supermarkets across the country have instituted shelf-labeling programs to highlight products with less packaging or less toxic ingredients. Purchasing these items shows manufacturers that consumers encourage and support source reduction.

How Can You Help?

Students can play an important role in protecting the environment by practicing source reduction. Here are some simple practices to help prevent waste:

- Donate old clothes and other household items so they can be reused or sold for reuse.
- Consider taking a thermos of juice to school instead of individual disposable containers.
- Use concentrated products to get more product with less packaging.
- Use double-sided copying and printing features.
- Buy pens, pencils, toothbrushes, and other items with replaceable parts.

- Use a durable lunch container or bag instead of a disposable one.
- Consider using environmentally preferable cleaning products instead of those that contain potentially toxic ingredients.
- Consider buying items that have been remanufactured or can be reused, such as toner cartridges for the printer or tires for the car.
- Encourage companies to reduce unnecessary packaging and the use of hazardous components in products. Many companies offer toll-free numbers and Web sites for these comments.
- Compost cafeteria food waste and use the finished compost to mulch the plants and trees around the school grounds.

Additional Information Resources:

Visit the following Web sites for more information on source reduction and solid waste:

- U.S. Environmental Protection Agency (EPA): <www.epa.gov>
- U.S. EPA, Office of Solid Waste site on source reduction: <www.epa.gov/epaoswer/non-hw/muncpl/reduce.htm>
- U.S. EPA, Office of Solid Waste site on global climate change and waste reduction: <http://yosemite.epa.gov/oar/globalwarming.nsf/content/actionswaste.html>
- Reuse Development Organization: <www.redo.org>

To order the following additional documents on source reduction and municipal solid waste, call EPA toll-free at (800) 490-9198 or look on the EPA Web site <www.epa.gov/epaoswer/osw/publicat.htm>.

- *Planet Protector's Club Kit* (EPA530-E-98-002)
- *A Collection of Solid Waste Resources* on CD-ROM
- *Reusable News* newsletters
- *National Source Reduction Characterization Report for Municipal Solid Waste in the United States* (EPA530-R-99-034)
- EPA's WasteWise program puts out *Bulletins* and *Updates* that deal with source reduction. To obtain applicable issues, call the WasteWise helpline at 800 EPA-WISE (372-9473) or visit the Web site at <www.epa.gov/wastewise>.

Art

Discovering Nature's Packaging

Objective

To teach students that some food items come in their own natural packaging.

Key Vocabulary Words

Packaging
Compost

Activity Description

Circle and color the items that have their own natural packaging.

Duration

1 hour

Materials Needed

- Copies of the *Find Nature's Packaging* worksheet for each member of the class
- Crayons or markers

Skills Used

Observation/classification
Motor skills

Activity

Step 1: Discuss how some food products have their own natural packaging that protects the part people eat. If possible, bring in examples of items that have natural packaging (e.g., bananas, unshelled nuts, oranges) and others that do not (e.g., cheese, crackers, soda). Discuss how nature's packaging can be used in compost, which returns materials to the earth. Refer to the Teacher Fact Sheet titled *Composting* on page 141 for background information on the composting process.

Step 2: Distribute the *Find Nature's Packaging* worksheet and pass out crayons or markers. Ask the students to circle the items that have natural packaging.

Step 3: Ask the students to color the items on the worksheet.

Assessment

1. Ask students what items have their own packaging.
2. Ask students what we can do with natural packaging instead of throwing it away.

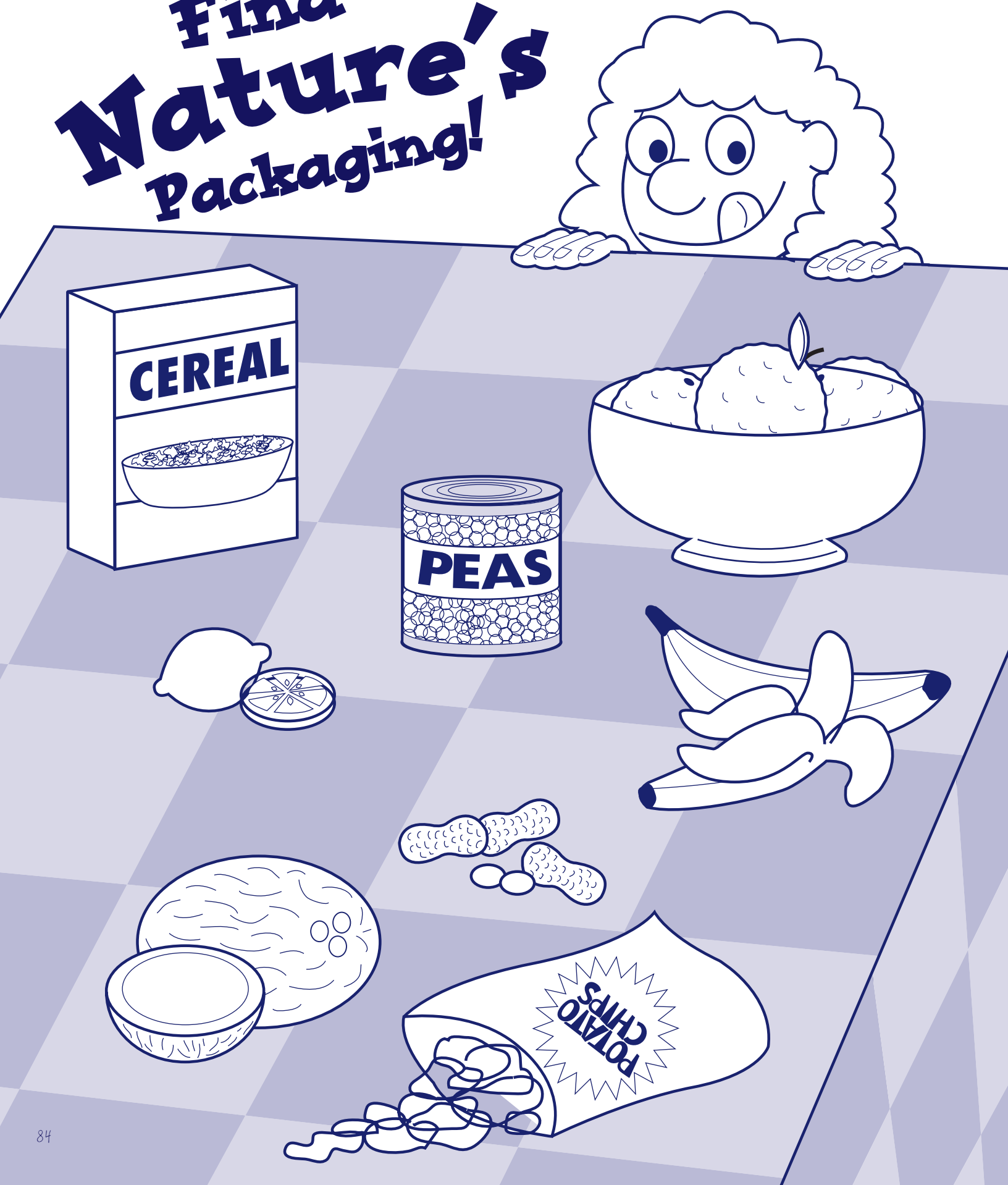
Enrichment

1. Start a vermicomposting bin in the class to demonstrate how nature's packaging can be recycled rather than thrown away. (See the activity *Worms at Work* on page 159 in the Compost chapter for instructions on how to start a vermicomposting bin.)
2. Bring in a variety of unshelled nuts (e.g., pistachios, walnuts, peanuts). Draw or find a sketch of a face, animal, or a fun object. Photocopy it and give one to each student. Have the students shell the nuts and then glue the shells to the sketch. Use paints to color the picture once the glue has dried.

Student Handout

Name:_____

Find Nature's Packaging!



art

Reuse: Not Just for the Birds

Objective

To teach students that, with some creativity, we can make useful things from items we might ordinarily discard in the trash or recycling bin.

Activity Description

Students will bring in plastic milk jugs to create bird feeders.

Materials Needed

- Extra plastic milk jugs (with caps) for students that do not bring in one from home
- Glue
- Scissors
- Paint
- Colored markers
- Two 1-foot long pieces of wood approximately 1/4- to 3/4-inch in diameter (per bird feeder)
- Bird feed for students to put in their finished feeders

Key Vocabulary Words

Reuse
Recycle
Source reduction

Duration

1 hour

Skills Used

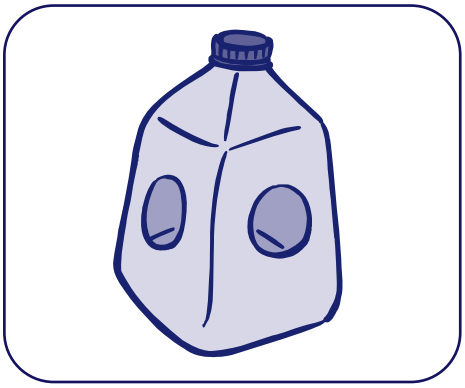
Motor skills

Activity

Instruct students ahead of time to bring in an empty plastic milk jug from home.

Step 1: Introduce the concept of source reduction to the class. Explain that reusing items is a great way to achieve source reduction. (Refer to the Teacher Fact Sheet titled *Source Reduction* on page 79 for background information.)

Step 2: With an adult's supervision or help, instruct students to cut out two large holes on different sides of their milk jug for birds to enter.

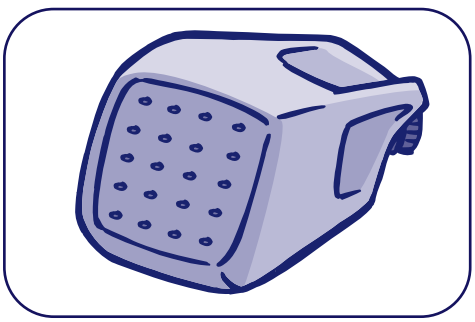


Journal Activity

Have students write a story from the point of view of a bird. What does the bird think of all of the trash it sees from the sky?

Step 3: Provide each student with two 1-foot-long pieces of wood. These could be sticks from a nearby park or even the school grounds. Explain that these wooden pieces will cut through the bird feeder and stick out on either end so that birds can perch on the feeder. With an adult's supervision or help, instruct students

to trace a circle below each of the large holes on the milk jug to match the diameter of the stick. Then, cut out the tracing and insert the wooden pieces through the milk jug.



Step 4: Punch small holes in the bottom of the jug to allow rain water to drain out. Tell students to make sure the holes are not too large, or else the feed might fall through.

Step 5: With markers and/or paints, work with the students to decorate the feeders.

Step 6: Have each student put bird seed in their feeders. Tell the students they can take their feeders home or hang them outside the school.

Assessment

1. Have students name items that can be reused without any alterations. Ask them to list items that can be changed to create a new product (like the bird feeder just created from the milk jug).
2. Ask students to explain why reuse is good for the environment.
3. Ask students what would have happened to the milk jug if it hadn't been used to make the feeder.

Enrichment

1. Organize a waste exchange—with just the class or the entire school. Ask students to bring in something from home they no longer need (e.g., a toy, game, piece of clothing). With teacher facilitation, students can then trade one item for another. Donate unwanted items to a local charity or thrift store.
2. Have students bring in small pieces of "junk" they think look interesting or colorful (e.g., bottle caps, colorful pieces of paper, wood scraps, toy parts, lids, old keys, pieces of old clothing). Then, have the class work together gluing them onto a large piece of wood creating a colorful, attractive mosaic. When the "junk" mosaic is finished, hang it on the wall of the classroom.
3. Instruct students to bring items from home that their families are reusing. Have the students present these items to the class as a "show and tell."

Source Reduction Roundup

language arts

Objective

To teach students the various ways to create less waste in the first place.

Activity Description

Students form teams and work together to answer questions on source reduction.

Materials Needed

- *Source Reduction Questions and Answers* sheet
- Chalk board or flip chart
- Clock or timer

Key Vocabulary Words

Reuse
Source reduction
Disposable
Pollution
Natural resources

Duration

1 hour

Skills Used

Communication
Observation/classification

Activity

Step 1: Discuss source reduction and reuse and how it relates to a clean and healthy environment. Explain what individuals can do to make a difference in the amount of waste that is created. (Refer to the Teacher Fact Sheets titled *Source Reduction* on page 79 and *Products* on page 25 for background information.)

Step 2: Divide the class into two teams. Bring the two teams to the front of the classroom and have them face each other. You might want to line up a row of desks on each side to create a "game show" setting. Flip a coin to decide which team will go first.

Step 3: In preparation for this activity, write the questions on a flip chart, or simply write them one at a time on the board. Present the first question to Team 1. Inform students there are a certain number of answers to this question. The number of correct answers is provided on the attached *Questions and Answers* sheet. Instruct Team 1 that they can consult for 2 minutes before they must try and provide as many of the six answers as possible.

Step 4: As the students in Team 1 state their answers, write them on the board below the question.

Step 5: Team 1 gets a point for every correct answer. If Team 1 was unable to get all six answers referred to on the *Questions and Answers* sheet, then Team 2 gets an opportunity to guess the rest of the answers for that same question. Write Team 2's answers on the board next to Team 1's answers. If Team 1 was able to provide all of the correct answers, then Team 2 doesn't get a chance to answer that question.

Step 6: Go over the answers with the class and discuss any answers that neither team could provide.

Journal Activity

Ask students to make a list of all the things they currently do that create less waste. Then ask them to list other things they could do to further reduce the amount of waste they produce in their daily routines.

Step 7: Start the process over again with question #2, but this time, allow Team 2 to answer first. Keep track of the score and work through all of the questions, alternating which team gets to answer first.

After all of the questions have been answered, the team with the most points wins. For extra credit, see if students can name even more correct answers.

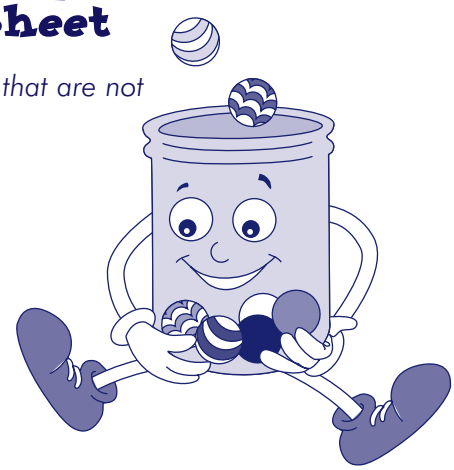
Assessment

1. Ask students what kinds of activities are involved in source reduction.
2. Have students list some things each of us can do to create less waste and reuse more.
3. Ask students to explain why source reduction is important.

Enrichment

1. Have each team of students devise its own questions and answers for the opposing team, and play again.
2. Organize a clothing drive with the class or the entire school. Donate the used clothing to a local charity or thrift store.

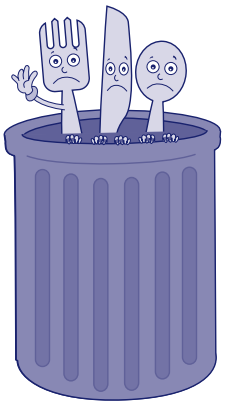
Source Reduction Roundup Questions and Answers Sheet



(Note: Students should be encouraged to think of additional responses that are not on these lists.)

What are 6 ways you can reuse a jelly jar?

1. Pen and pencil holder
2. Cookie cutter
3. Storage container for leftovers
4. Drinking glass
5. Vase for flowers
6. Container for nonfood items such as paper clips, buttons, marbles, or any other small item



What are 6 commonly used items that are often thrown away but could be reused? (Note that some items have both reusable and disposable parts.)

1. Cups
2. Eating utensils (e.g., forks, knives, spoons)
3. Plates
4. Cloth Napkins
5. Lunch bags
6. Batteries

What are 6 benefits of source reduction?

1. Reduces waste
2. Conserves natural resources
3. Reduces pollution
4. Reduces disposal costs
5. Reduces toxic waste in the waste stream
6. Saves money

What are 6 ways you and your family can reduce waste?

1. Use a reusable bag when shopping
2. Bring your lunch in a reusable bag
3. Buy or make your own nontoxic cleaners
4. Make sure you only buy what you need
5. Donate items you don't need anymore instead of throwing them away
6. Use both sides of paper before recycling it

Ecological Picnic

Objective

To show students that choices they make about products and packaging can have an impact on the amount of waste they generate.

Key Vocabulary Words

Source reduction
Durable
Nondurable

Activity Description

Plan a picnic with students that produces as little waste as possible.

Duration

Day 1: 1 hour
Day 2: 1 hour, 30 minutes

Materials Needed

- Lunch
- Durable or reusable plates, silverware, cups, napkins, etc.
- Recyclables container
- Garbage container
- Food waste container, if your school composts
- Large scale

Skills Used

Communication
Computation
Observation/classification

Activity

Day 1

Step 1: Select a location to hold your ecological picnic, preferably outdoors with an indoor alternative in case of inclement weather. Find three containers the children can use to separate their recyclables, trash, and food scraps after they have finished their picnic lunch. Check with your cafeteria manager to see if your class can use nondisposable silverware, cups, and plates and if arrangements can be made to provide bag lunches for students who forget or are unable to bring a lunch from home.

Step 2: Explain to students that you will be taking them on an ecological picnic where they will learn how to create less garbage, recycle more, and compost their leftover food items. Introduce the concepts of durable and disposable items and source reduction to the class (refer to the Teacher Fact Sheet titled *Source Reduction* on page 79 for background information). Note how students will put these concepts into practice during the picnic.

Step 3: With students, compile a list of items on the blackboard that people usually bring to a picnic (e.g., paper plates, plastic utensils, paper napkins, chips, drinks, sandwiches). Working through the list on the blackboard, discuss items that can replace the disposable items. Examples might include cloth napkins

Journal Activity

Ask students if they saw any litter where they had their picnic. Ask them how it made them feel to see litter. How could it affect the plants, animals, and other people that use the space?

instead of paper napkins or washable plastic plates instead of paper plates. Explain the benefits of buying in bulk by describing how one large bag of popcorn, for example, leaves less garbage than many smaller bags. You can also discuss picnic games and activities and their impact on the environment. Note that tossing a frisbee or flying kites doesn't create any waste, but having a water balloon fight does.

Step 4: Send a note home with the children explaining how to prepare for the picnic. The note should explain that your class is having an ecological picnic and is trying to limit the amount of garbage left over. Encourage students to discuss what they've learned about source reduction with their parents and to help make preparations by placing food in reusable containers or including as little packaging as possible. Parents can also be invited to volunteer for the picnic. You can conduct the picnic in two ways:

A) Children can bring their own lunch.

B) Children can bring "potluck" items. This may require more time and effort from the parents to provide and transport the items. In class, have the children draw up a list of the things they need and have each of them select something to bring. If your cafeteria is unable to provide silverware, cups, and plates, these will need to be provided by students. In the note to the parents, list the item the student has chosen to bring.

Day 2

Step 1: Before the picnic, explain to the students that they will be weighing the amounts of recyclables, trash, and food scraps left over from the picnic. Ask them to guess approximately how many pounds of material they think will be left over in each of the containers after the picnic. Draw the Eco-Picnic Table shown below on the blackboard and enter their guesses in the first

Eco-Picnic Table

	Recyclables	Food Scraps	Trash	Total Guess
Guess				
Actual Weight (with container)				
Subtract Weight of Empty Container				
Total of Each				

row. Show students which container you want them to use for recyclables, trash, and food scraps and then weigh each of the empty containers on the large scale. Record these numbers on the Eco-Picnic Table. Encourage the students to pick up any litter they find at the picnic site.

Step 2: Go to the picnic site and have the picnic.

Step 3: After lunch, discuss the types of garbage that are left over, as well as the garbage prevented because of the choices students made. Have the students look at the leftover garbage and come up with ways they could have reduced it further.

Step 4: Return to the classroom with the containers. Weigh the three containers to determine the amount of material that must be disposed of, recycled, or composted. How close was the students' original guess? Multiplied by 7 days, how much waste would your classroom dispose of in 1 week? How much would it recycle? How much could be composted? Ask your students to discuss, generally speaking, what would happen if the whole school (or even America as a whole) practiced source reduction as they did for the picnic.

1. Ask students why people use disposable items even if they know they make more garbage.
2. Ask students to provide an example of a disposable item that they or their family use regularly. Are there other alternatives that could create less waste? Would they or their family be willing to switch products or change their lifestyles to produce less waste and have less of an impact on the environment?
3. Ask students to think of other ways, beyond a picnic, that they can practice source reduction. Examples might include using cloth napkins and wipes instead of paper towels, buying juice in large bottles or concentrate rather than separate single-serving bottles, using their imagination for games rather than toys, or taking cloth bags when shopping.

1. You could consider conducting this activity by measuring the recyclables, trash, and compostables from a regular day's lunch compared to the ecological picnic lunch.
2. Collect the food scraps left over from the picnic and put them in a vermicomposting bin or compost pile. (Refer to the composting activities section and the Teacher Fact Sheet titled *Composting* on page 141 for more information.)
3. Make fun lunch bags out of an old pair of jeans or shorts. Cut off the legs, sew the bottom closed just under the pockets, and tie thick ribbon through the belt loops for handles. Help students decorate their bags with objects such as buttons, small toys, scrap cloth and ribbon, and fabric paints.

math

science

How Much Lunch Is Left Over?

Objective

To teach students that reducing product packaging can often reduce waste.

Activity Description

Students will weigh their lunches before and after eating to determine how much of their lunch is packaging.

Materials Needed

- Copies of *Packaging Worksheet* for each member of the class
- Resealable plastic bags (approximately 1 quart capacity) for each member of the class
- Small scales capable of weighing items under a pound

Key Vocabulary Words

Source reduction
Recycling
Organics
Composting
Landfills
Disposable

Duration

2 hours

Skills Used

Computation
Problem solving

Activity

Before conducting this activity, ask all students in the class to bring their lunch from home on a selected day. If some students are on a cafeteria lunch program, consult with cafeteria staff to see if they can provide box lunches on a certain day. If box lunches aren't feasible, have the students use the waste from their regular school lunches (e.g., milk containers, plastic packages, paper napkins, cups, etc.).

Step 1: Explain source reduction to the class. Discuss how it is one of the most important activities we can engage in to help the environment. In addition, discuss how packaging is frequently necessary, but can also create a lot of waste. (Refer to the Teacher Fact Sheets titled *Products* on page 25 and *Source Reduction* on page 79.) Distribute a copy of the *Packaging Worksheet* to each student.

Step 2: Before lunch, ask students to list each piece of their lunch (including the lunch bag or container) in Column A, then weigh each item on a scale and record the weights in Column B on their *Packaging Worksheet*. Send them to lunch with their own resealable bag and instruct them to put all packaging from their lunches in the bag instead of the garbage can. Explain that they should save nature's packaging also (e.g., banana peels, orange rinds, peanut shells).

Journal Activity

Ask students to write a story about what their lives and the environment would be like if everything was disposable and they could not reuse or recycle anything.

Step 3: After lunch, have the students weigh each piece of packaging from their resealable bags and record these numbers in Column C.

Step 4: Have the students compare the weight of each piece of their lunches before eating and after. Based on these numbers, calculate the percentage of the total weight that is the packaging for each lunch item.

Step 5: Instruct students to total Columns B and C and put these figures in the "Total" row of those columns.

Step 6: Discuss recycling, composting, and reuse. Have students put a check in the appropriate box for those packaging items that are reusable, compostable, or recyclable. These checks are for information only, showing students what methods could be used as alternatives to throwing out these items. If students couldn't check any of these alternatives, then the total in their final column (H) would be zero. If, however, they can check off any of these (reusable, compostable, recyclable) columns, then that item's remaining packaging weight gets added to column H.

Step 7: Ask students to compare their totals from Columns B, C, and H and share them with the class. Discuss the types of packaging waste they could not reuse, compost, or recycle. Discuss how this waste could be reduced through other actions, such as their purchasing behavior or the design of the packaging.

Step 8: Start a list on the chalkboard of ways students can create less waste in their lunches (e.g., buying in bulk, reusable lunch bags, reusable utensils).

Assessment

Ask students the following questions:

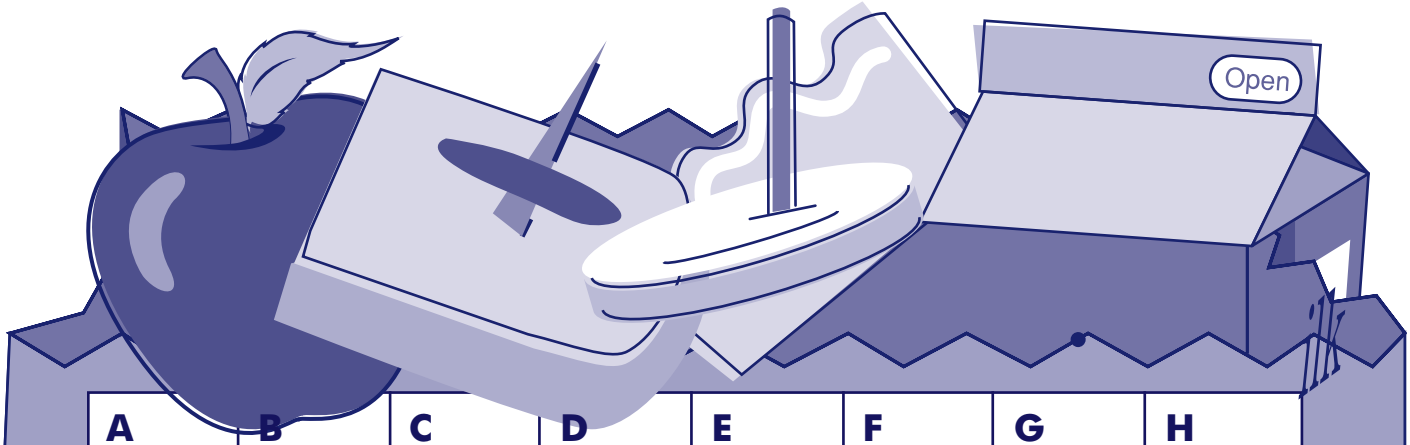
1. Why do manufacturers use packaging?
2. Why did some students have more packaging waste than others?
3. Why do some products have so much packaging?
4. Are there ways to avoid purchasing so much packaging? What are they?
5. Can some packaging be reused or recycled? Which?
6. What is the difference between a disposable and reusable product? What are some examples?

Enrichment

1. Bring in a bulk item and the same amount in individually wrapped single serving containers. Empty the contents of the containers and weigh them. Compare the weights of the one big container to the total weight of the multiple single-serving containers. Discuss what effect the different kinds of packaging have on the environment.
2. Ask students to go to the store and compare the per unit prices of similar items that are packaged differently (e.g., bulk versus individual packages). Instruct them to write down their findings and draw conclusions from them.
3. Have students find a product they believe to be packaged in excess. Ask them to explain why they think the packaging is wasteful. Instruct the students to write a letter or send an e-mail to the manufacturer that sells the overpackaged product asking the company to consider reducing the amount of packaging. Request a response.
4. Instruct students to select a package of their choice and think of ways they could reduce the volume and/or weight of the package without changing its function. Ask students to sketch a rough drawing or write a description of their proposed package and list the reasons why they think the new package would be better.

Packaging Worksheet

Name: _____



A	B	C	D	E	F	G	H
Item From Lunch	Weight Before Eating (Product and Packaging)	Weight After Eating (Packaging)	Packaging %	Packaging Reusable?	Packaging Compostable?	Packaging Recyclable?	Total Amount of Trash That COULD Have Been Avoided.
1. Example: Banana	170 g	28 g	16%		✔		28 g
2.							
3.							
4.							
5.							
6							
7.							
8.							
9.							
10.							
Totals							